CLAIMS

1. Apparatus for injection molding articles of plastics material, characterized in that it comprises: molds (2a) and countermolds (2b) forming a plurality of molding units (3), molding cavities (7) being defined inside said molds and countermolds; at least one injection assembly (8) and at least one auxiliary assembly (9) adapted to respectively supply melted plastics material and pressurized fluid into said molding cavities (7); said molding units (3) being movable with respect to said injection assembly (8) and auxiliary assembly (9); and removable connecting devices (12, 8a), and check means (20) adapted to avoid counter flows from said molding cavities (7), being provided between said molding units (3) and said injection assembly (8) and said auxiliary assembly (9).

2. Apparatus according to Claim 1, wherein feeding ducts (10) extend between said auxiliary assembly (9) and said molding cavity (7), said feeding ducts (10) comprising initial segments (11a) engaged with said auxiliary assembly (9) and final segments (11b) engaged with said molding units (3) and removably connected to said initial segments (11a), and wherein said check means (20) comprises shut-off devices (20a) connected to said final segments (11b) and adapted to prevent said pressurized fluid from flowing back to said molding cavities (7).

3. Apparatus according to Claim 2, wherein said shut-off devices (20a) comprise at least one stop valve (21) adapted to prevent the pressurized fluid from flowing back from said molding cavity (7), and at least one manually operated discharge valve (22) for said fluid.

4. Apparatus according to Claim 3, wherein said final segments (11b)

comprise a discharge portion (23) connected to said discharge valve (22), and wherein said discharge valve (22) is an electric valve.

5. Apparatus according to Claim 2, wherein said removable connecting devices comprise a quick-connection device (12) inserted between said initial segments (11a) and said final segments (11b).

6. Apparatus according to Claim 1, wherein supplying channels (18) extends between said injection assembly (8) and molding cavity (7), and wherein said removable connecting devices comprise, in said supplying channels (18), at least one movable injector (8a) located between said injection assembly (8) and said molding units (3).

7. Apparatus according to Claim 6, wherein said check means (20) in said supplying channels (18) comprises one-way elements (20b) for the plastics materials.

8. Apparatus according to Claim 7, wherein said one-way elements (20b) are formed by at least one conical channel (24) made in said molding units (3).

9. Apparatus according to Claim 7, wherein said one-way elements (20b) are formed by at least one stop valve.

10. Apparatus according to Claim 1, wherein said injection assembly (8) and said auxiliary assembly (9) are substantially stationary, and wherein said molding units (3) are movable along a substantially closed-loop path (25).

11. Apparatus according to Claim 10, wherein working stations are provided along said path (25), said working stations comprising plastics material injection and pressurized fluid supplying (26), cooling (27, 28, 29), pressurized fluid discharging and demolding (30) stations.

12. Process for injection molding articles of plastics materials, characterized in that it comprises: at least one step for injecting melted plastics material in molding cavities made in molding units, at least one step for introducing a pressurized fluid inside said plastics material, steps for cooling and hardening said plastics materials inside said cavities, with said pressurized fluid, and final steps comprising the demolding of the molded articles, the process comprising momentarily keeping said plastics material and said pressurized fluid inside said molding units, moving said molding units, and carrying out some of said steps in reciprocally distinct positions in order to contemporaneously carry out some of them.